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I, KIM MARSHALL, MANAGER EXAMINATION SUPPORT AND SALES,
hereby certify that the annexed is a true copy of the Provisional specification in
connection with Application No. PP 4605 for a patent by HANDLETEC PTY LTD
filed on 10 July 1998.



WITNESS my hand this Fifth
day of May 1999

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MANAGER EXAMINATION SUPPORT AND
SALES

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AUSTRALIA

Patents Act 1990

HANDLETEC PTY LTD

PROVISIONAL SPECIFICATION

Invention Title:

Method and means for attachment of bag handles

The invention is described in the following statement:

The present invention is related to that disclosed in co-pending Australian Provisional Patent Application No PP3176 filed on 24 April 1998 and the contents of that specification are incorporated herein by reference.

5 The present invention is also concerned with subject matter disclosed in WO97/48550 and the contents of the specification of that published International patent application are also incorporated herein by reference.

10 In the art of bag manufacture and with particular regard to the application of flexible handles to bags as discussed in the aforementioned specifications, the mechanisation and automation of applying such handles has been highly desirable but hitherto unavailable. Apparatus which automates the manufacture of bags of the type depicted in Fig 1 of WO97/48550 have been in use for many years. The output of such equipment being a completed bag without handles attached which are later added to the bag by a manual operation. WO97/48550 discloses a method and means for integrating the application of handles to bags by eliminating manual handling.

20 In a first aspect the present invention provides a method for attaching flexible cord handles to bags or other receptacles wherein a bag is maintained with a mouth of the bag in an open configuration by means of the application of a partial vacuum to at least one side wall of the bag during which a flexible cord handle is applied to the bag.

25 Cord handles and their method of attachment applicable to the present invention are as disclosed in Australian Provisional Patent Application PP3176 and as proposed in WO97/48550. An alternative form of handle suited to this aspect of the present invention is one wherein a length of flexible cord handle is fitted with elongate stops which extend transversely of the cord and which stops can be aligned parallel to the cord to be pushed through apertures in the side wall of the bag before returning to their transverse orientation relative to the cord and so act as a stop which prevents removal of the cord from the bag when the cord is fitted to the bag.

30 In another aspect of the present invention there is provided a method of fitment of a cardboard or similar base insert into a bag by opening of the mouth of the bag while moving the bag along a pathway whereafter a base insert is placed into the bag and affixed to the interior of the bottom of the bag by adhesive pre-applied to the bottom of the bag and/or to the underside of the base insert. The fitment of a cardboard base into a bag in accord with

this aspect of the invention can be readily integrated into the pathway for fitment of handles in accord with the first aspect described above with the adding of the base insert to the bag being provided before or after the location at which the handles are fitted or at the handle fitting station.

5 In one embodiment bags are carried along a pathway so that they are oriented with their mouths uppermost and suction applying means are positioned to contact the exterior of opposite sidewalls of the bag near to the mouth of the bag and draw the bag open via relative movement therebetween while holding a respective bag sidewall under partial vacuum force.

10 In a further aspect the present invention provides a method and means for fitment of flexible cord handles with pre-applied end stops oriented transversely of the cords as described above. In this aspect a cord is fed to an applying station having means for orienting each end stop in parallel alignment with each adjacent cord section; each end stop then being fed
15 through an aperture in a sidewall of a bag, the end stop being gripped at the opposite face of the sidewall and moved so that each end stop is released and oriented transverse to the axes of the cord on the opposite face or the sidewall, whereafter removal of the cord from the sidewall of the bag is prevented by the stop on the cord contacting the opposite face adjacent the
20 aperture; the largest cross-sectional dimension of the aperture being less than the elongate dimension of the stop.

The present invention will now be described by way of example with reference to the accompanying drawings, in which:-

25 Fig 1 is an isometric view of a schematic arrangement of one embodiment of the interior workings of a handle applying station;

 Fig 2 is a view of the embodiment of Fig 1 detailing the cord handle supplying arrangement omitted from Fig 1 for reasons of clarity;

 Fig 3 is a cross-sectional view III-III of Fig 2;

 Fig 4 is a schematic plan view of a base inserting station;

30 Fig 5 is a schematic transverse cross-sectional view of a first embodiment of a cord handle applying and fixing station;

 Fig 6 is a plan view of Fig 5;

 Fig 7 is a perspective view of a form of bag handle suitable for use in the present invention;

35 Fig 8 is a transverse cross-sectional view of a bag handle applying station for fitment of cord handles in accord with Fig 7; and

Fig 9 is a plan view of the arrangement shown in Fig 8.

The handle applying station 10 depicted in Figs 1 and 2 receives bags 11, which are gripped by moveable suction force grippers 12, being moveable under the action of a pneumatic or hydraulic pick and place cylinder 13 which moves to reach out to grip a bag and draw it on to a set of suction grippers 12. A plurality of such gripper sets 12 are mounted on an indexing chain drive system 14.

The pick and place cylinder 13 and its suction grip is withdrawn from a bag 11 once that bag is gripped at a station 12. Movement of the indexing chain drive system 14 to which the bag gripping sets 12 are mounted carries a bag 11 to a cord handle applying station as shown in Fig 3.

At the cord applying station of Fig 3 a predetermined length of cord is furnished. Fig 2 depicts one form of producing a predetermined length of cord which is supplied from a continuous cord length 15 travelling around cord indexing wheel 16 mounted atop the unit 10. Cord pick-up clamp and cylinder 17 draws a length of cord from the continuous length 15, which is then cut to size by hot wire cord cutter 18 to be readied for insertion into bag 11 at the cord applying station of Fig 3. Typically, the form of cord could be as shown in any of Figs 3-5b of Australian provisional patent application PP3176 or of a form as depicted in Fig 7 hereof.

A bag opening suction cup and pneumatic/hydraulic cylinder 19 is activated to open the mouth of bag 12 against the holding action of bag indexing suction cup and cylinder assembly 12. The ends of a length of cord handle are then passed through bag handle apertures formed in the sidewalls of a bag 11 at hole punching station 20 upstream of the handle applying station of Fig 3. The Fig 3 embodiment depicts a moveable heater block assembly 26 for shaping an aglet in accord with Fig 5b of provisional application PP3176. For reasons of clarity, a bag handle applying station is shown in Figs 2 and 3 fitting handles only to one sidewall of a bag whereas the other sidewall can have a handle fitted by an arrangement which substantially mirrors the cord supplying, cutting and fitting arrangement shown in Figs 2 and 3.

At the completion of the handle applying and other optional actions of station 10 each bag is removed from station 10 by means of out place cylinder 25 and its attached suction pad gripper which holds bag 11.

The schematic of Fig 4 shows one arrangement for feeding and fitting a stiff base member or insert to the interior of a bag. A base insert member 21 is supplied from a stack under the action of a servo indexing drive system 22. The topmost base insert 21 is gripped under the action of a vacuum force pick up 23, having a vacuum pad 24. Vacuum pad 24 traverses with a gripped base insert 21 to a location in the path of movement of bags 11 in apparatus 10 where the mouth of bag 11 is open. The base insert 21 is then fitted within the bag 11 as shown in the left hand schematic of Fig 4 under the action of variably displaceable tiltable and placing cylinders 27; the vacuum force of pad 24 is released at a predetermined location within the bag so that the released base insert 21 falls to the bottom of the bag 11 to form a stiffener for the base of the bag. Preferably, the base insert 21 is adhered to the base of the bag, by adhesive located on the interior of the base of the bag or positioned on the underside of base insert member 21. By this means an insert 21 is fixably retained against the base of bag 11.

Figs 5 and 6 depict in more detail an arrangement where aglets of the form of Figs 5a and 5b of provisional application PP3176 are passed through openings in a bag 11 under the action of a cord inserting cylinder 30. Aglet 31 being gripped by cord insertion handling clamp 32 mounted on rotary cylinder 33 adapted to move toward bag 11 under action of cord inserting cylinder 30.

Heating block 34 is inserted into the mouth of bag 11 so that the free end of aglet 31 contacts block 34 within the bag to shape the free end of aglet 31 to a size which cannot thereafter pass out of bag handle aperture 35 in bag 11. In the Fig 6 view, cord insert guide tool 36 is shown which has been omitted from Fig 5 for reasons of clarity.

The cord handle of Fig 7 is formed by a flexible cord section 40 with transverse end stops 41. Such a cord can be supplied as discrete items or as a series of repeated sections on a continuous length of cord fed to a cord applying station which severs the discrete sections before their application as handles to a bag.

The embodiment of Figs 8 and 9 is similar to that of Figs 5 and 6, but in this case a cord handle of the form of Fig 7 is applied by passing respective end stops 41 through apertures 35, which upon their release reorient to lie transversely of respective apertures 35, and of their adjacent section of cord 40. As shown in Fig 8, interiorly of the mouth of bag 11, there is positioned a

bag holding clamp assembly 50 to aid the stable positioning of the side wall of bag 11 relative to the movement of end stop 41 under the action of cord inserting cylinder 30.

5 It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive.

Dated this tenth day of July 1998

HANDLETEC PTY LTD
Patent Attorneys for the Applicant:

F B RICE & CO

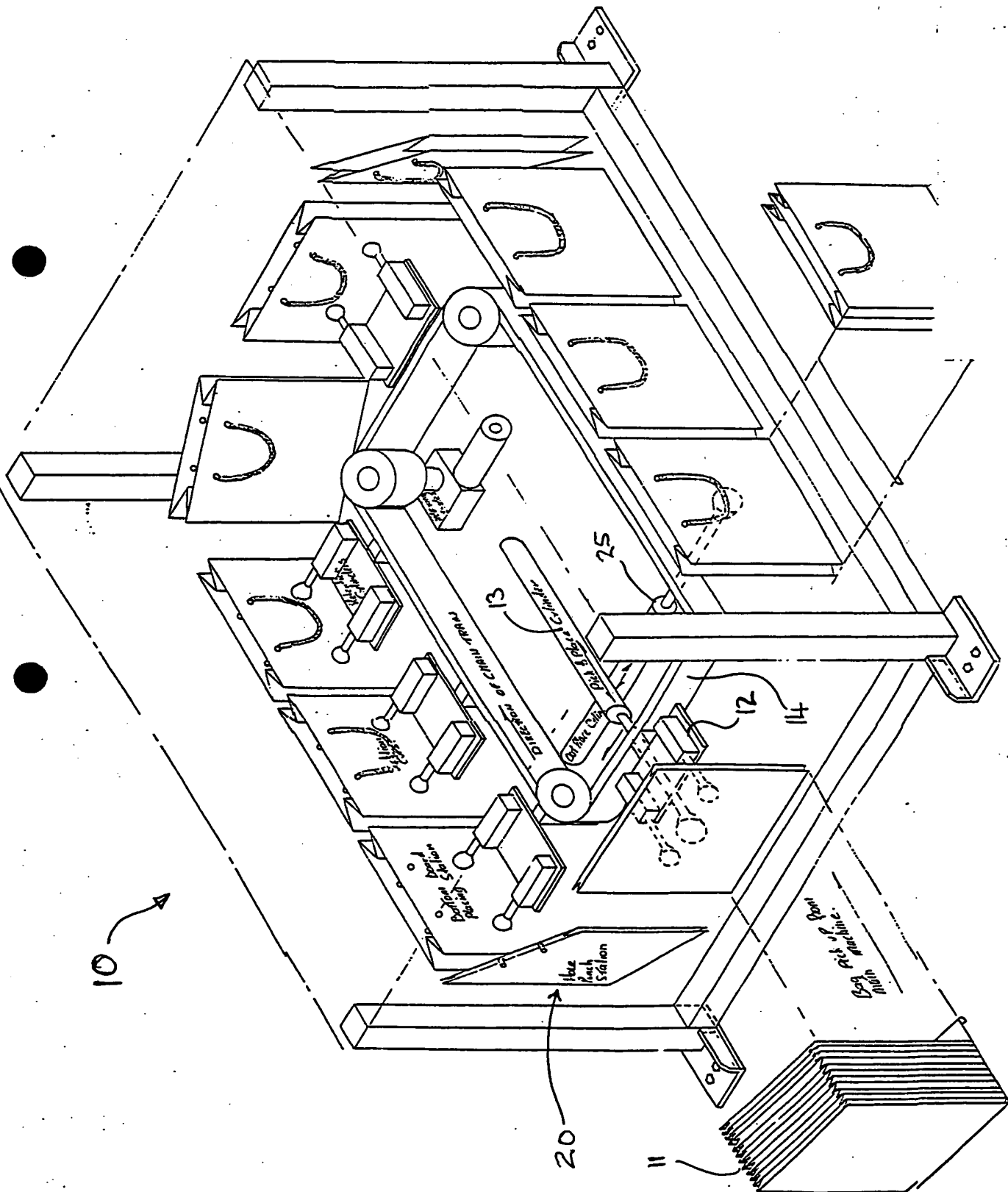


Fig 1

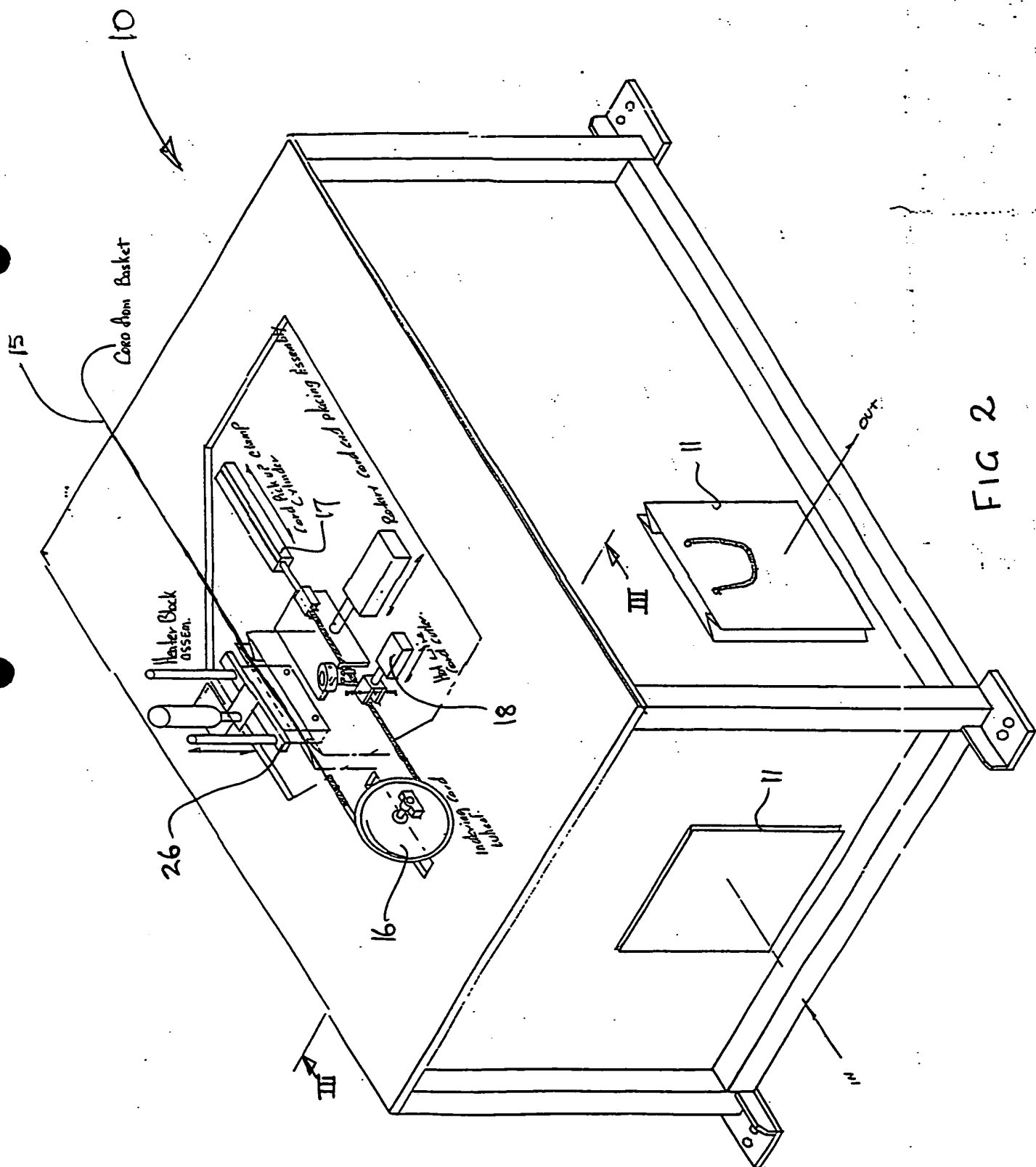


FIG 2

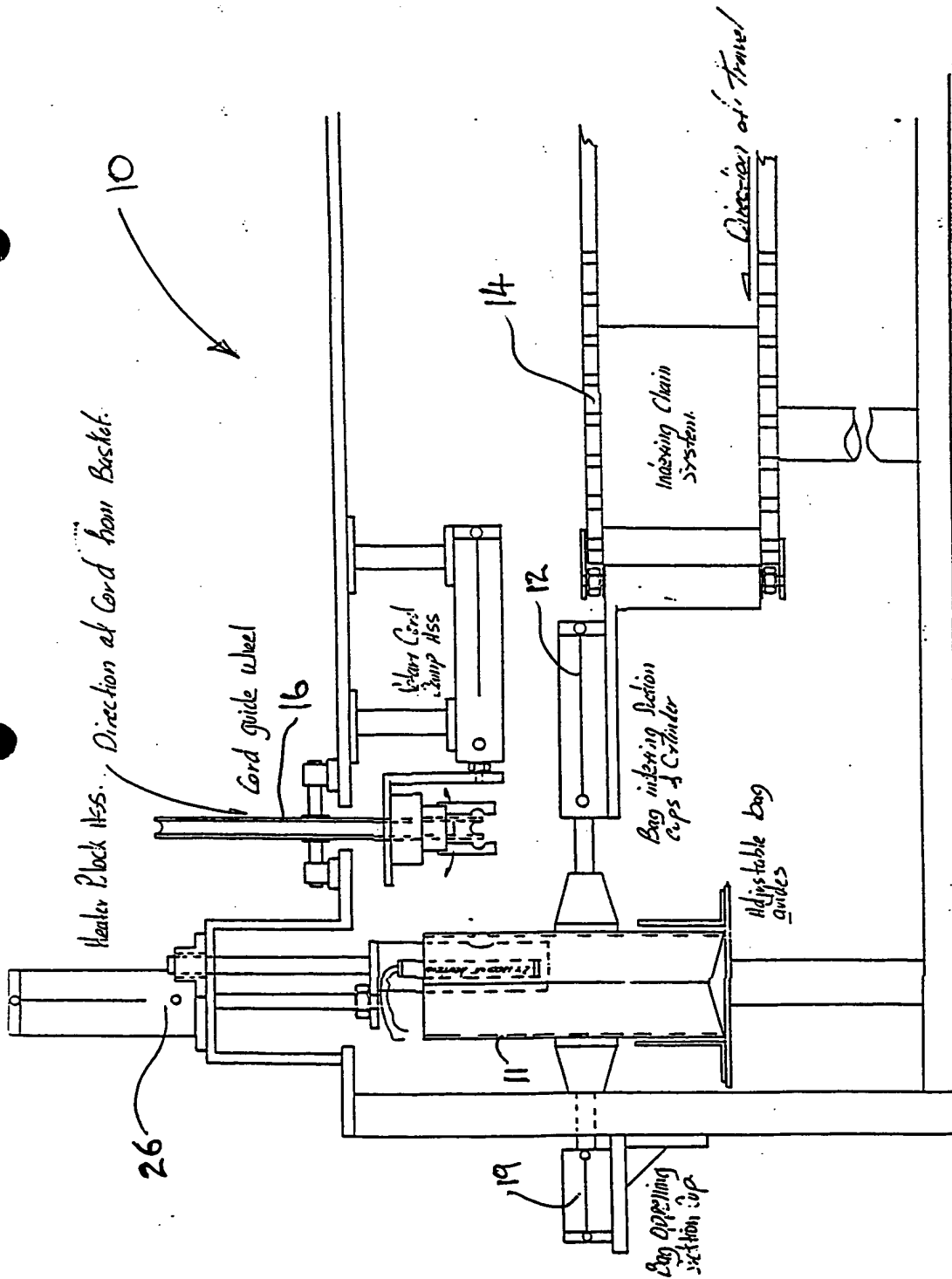


FIG 3

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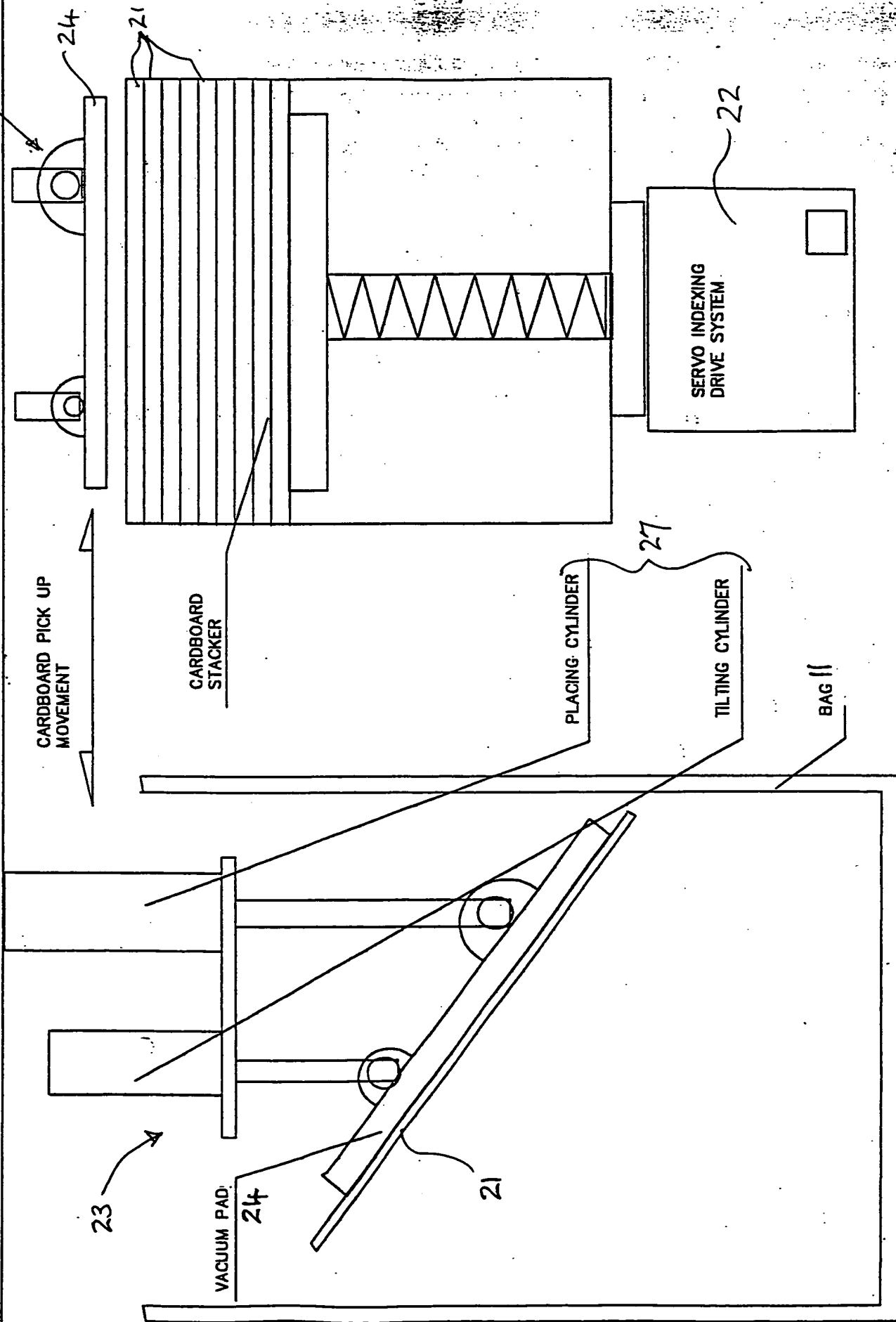
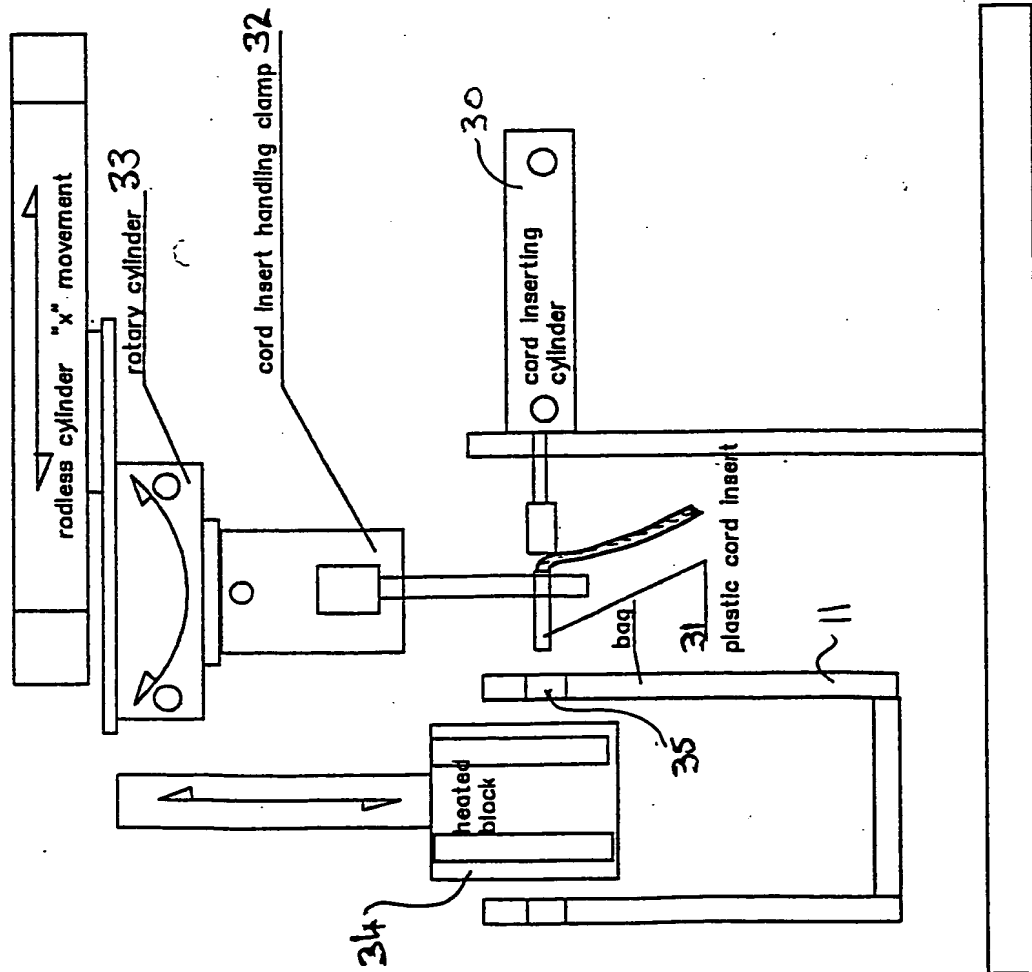
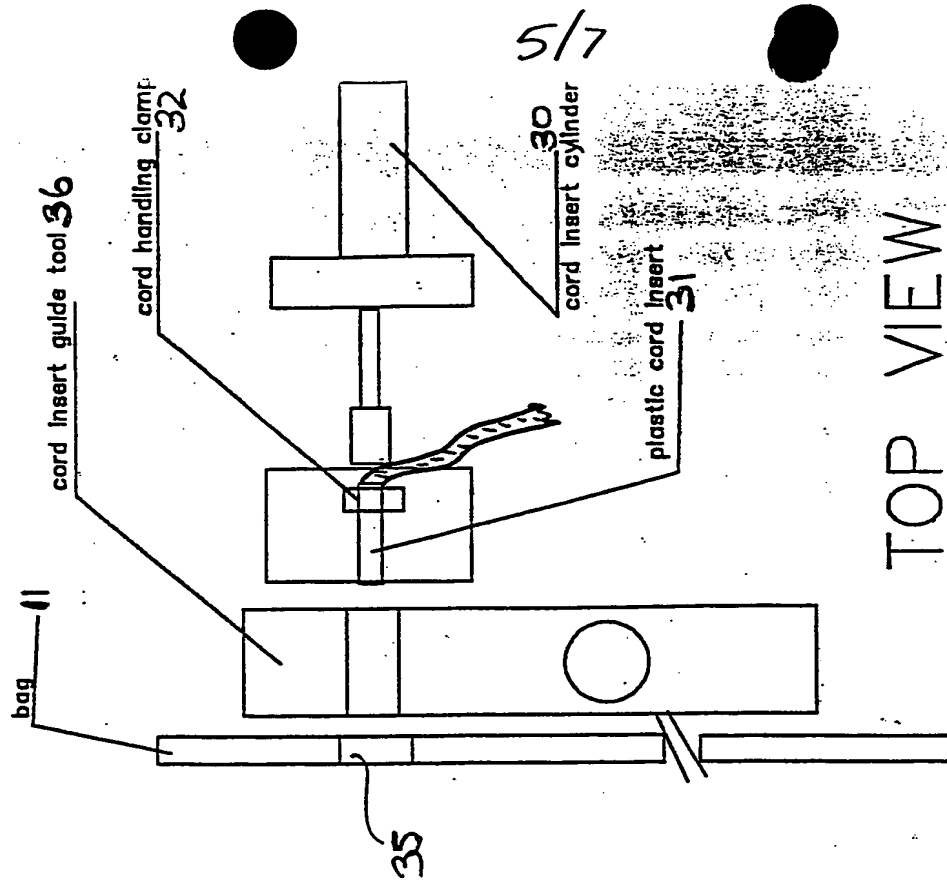


FIG 4



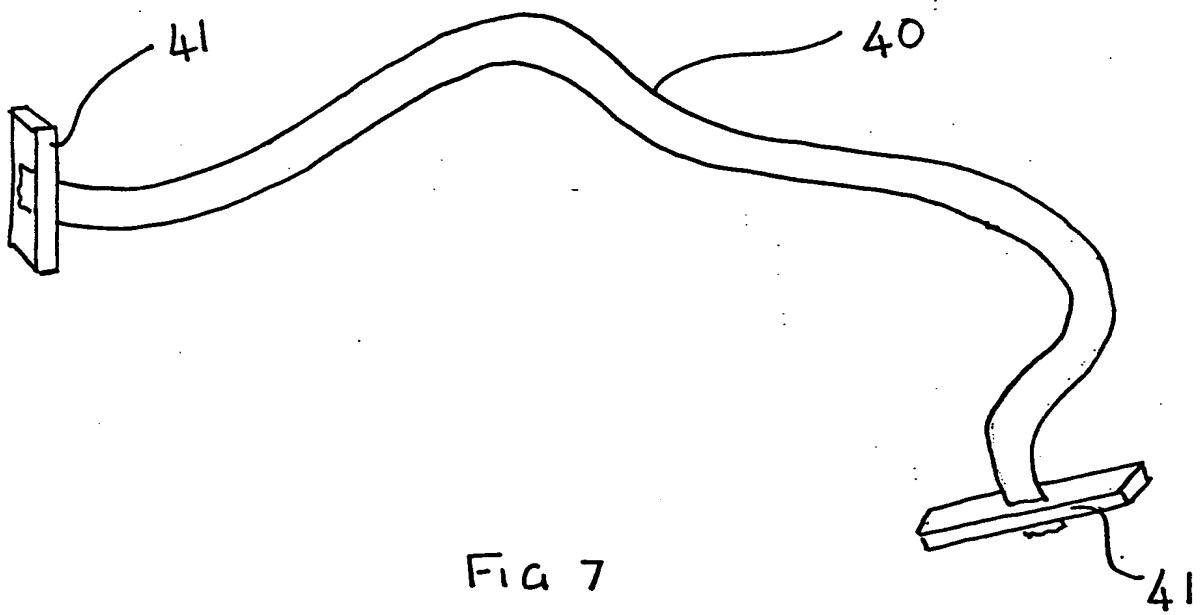
END VIEW FIG 5

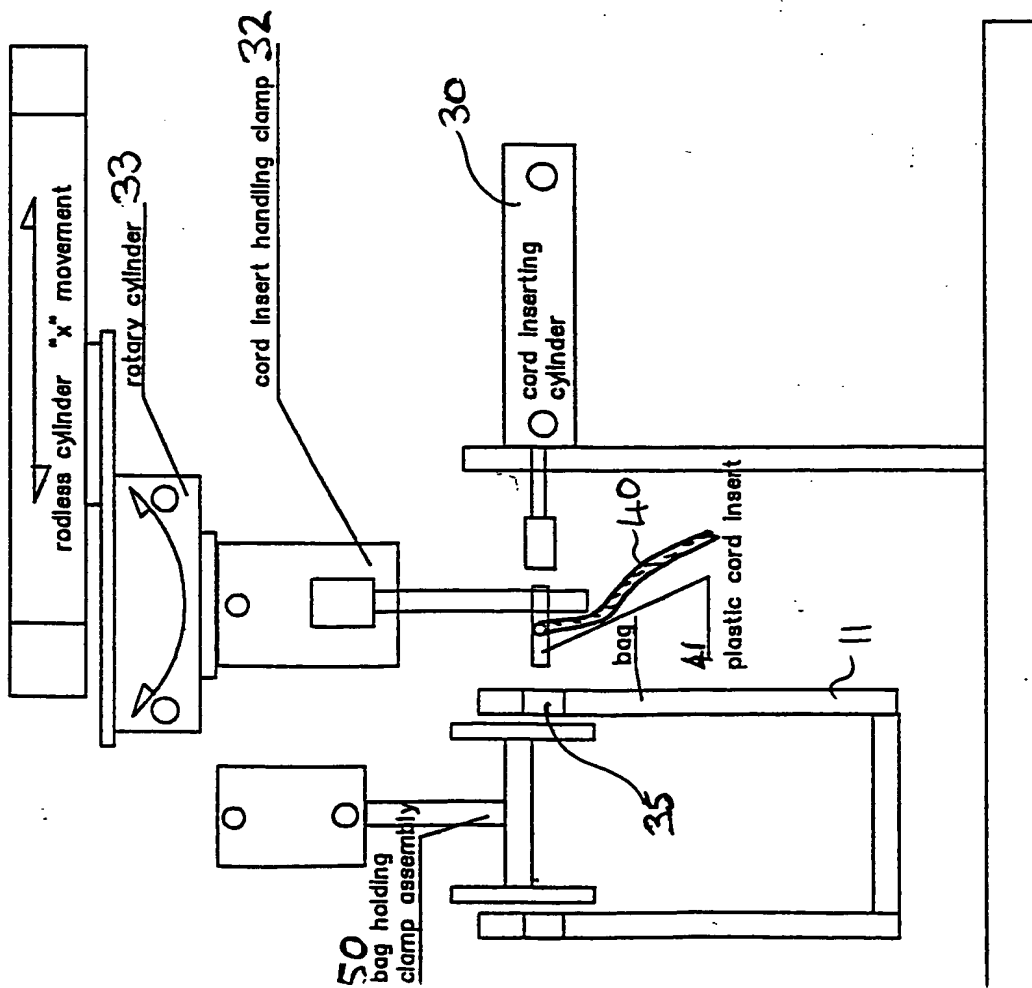


TOP VIEW

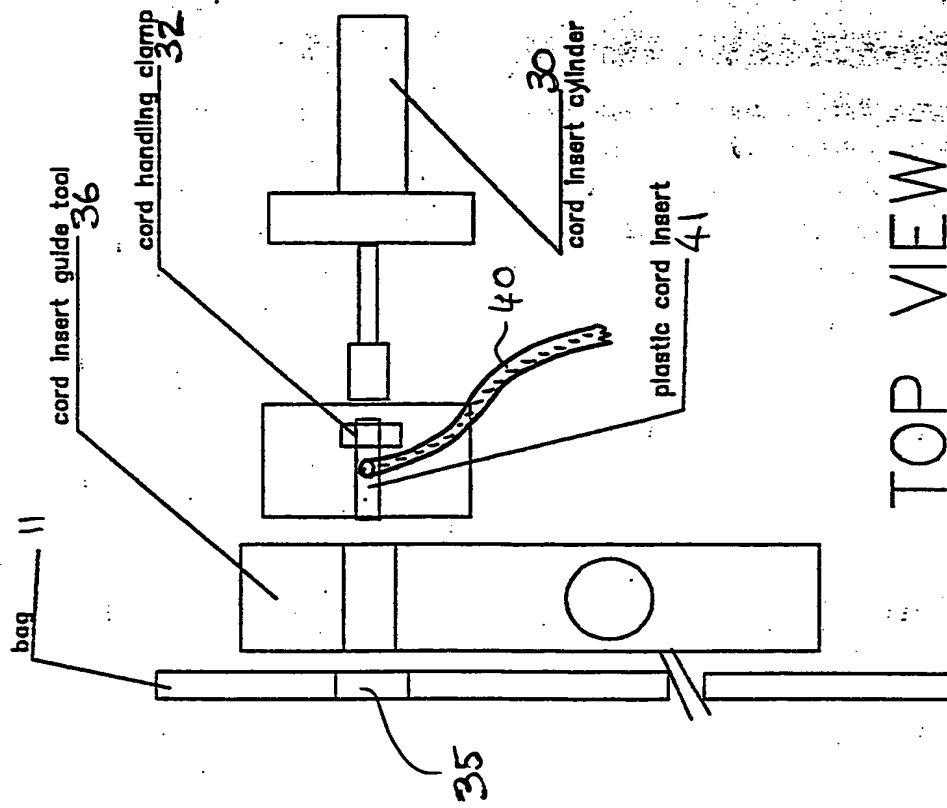
FIG 6

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END VIEW FIG 8



TOP VIEW FIG 9